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EP 99/9794

Bescheinigung Certificate Attestation

Die angehefteten Unterlagen stimmen mit der ursprünglich eingereichten Fassung der auf dem nächsten Blatt bezeichneten europäischen Patentanmeldung überein.

The attached documents are exact copies of the European patent application described on the following page, as originally filed.

Les documents fixés à cette attestation sont conformes à la version initialement déposée de la demande de brevet européen spécifiée à la page suivante.

Patentanmeldung Nr. Patent application No. Demande de brevet n°

98310082.7

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN COMPLIANCE WITH RULE 17.1(a) OR (b)

Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

I.L.C. HATTEN-HECKMAN

DEN HAAG, DEN
THE HAGUE,
LA HAYE, LE 28/02/00

Europäisches Patentamt
European Patent Office
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Blatt 2 der Bescheinigung
Sheet 2 of the certificate
Page 2 de l'attestation

Anmeldung Nr.:
Application no.: 98310082.7
Demande n°:

Anmeldetag:
Date of filing: 09/12/98
Date de dépôt:

Anmelder:
Applicant(s):
Demandeur(s):
SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.
2596 HR Den Haag
NETHERLANDS

Bezeichnung der Erfindung:
Title of the invention:
Titre de l'invention:
Transponder communications system

In Anspruch genommene Priorität(en) / Priority(ies) claimed / Priorité(s) revendiquée(s)

Staat: State: Pays:	Tag: Date: Date:	Aktenzeichen: File no. Numéro de dépôt:

Internationale Patentklassifikation:
International Patent classification:
Classification internationale des brevets:
G08G1/0967, G06K7/10

Am Anmeldetag benannte Vertragstaaten:
Contracting states designated at date of filing: AT/BE/CH/CY/DE/DK/ES/FI/FR/GB/GR/IE/IT/LI/LU/MC/NL/PT/SE
Etats contractants désignés lors du depôt:

Bemerkungen:
Remarks:
Remarques:

Title: Transponder Communications System TS 9183 EPC

Technical Field

This invention relates to a transponder system enabling two-way communication between a fixed station and a mobile station such as in a vehicle or carried by a user. The communication is wireless, that is by a mode that requires no tangible communication circuit between the fixed and mobile stations.

Background Art

Proposals have already been made to provide vehicles or their drivers with tags which can be interrogated to identify the vehicle or person concerned in order to facilitate a transaction such as the purchase of petrol or other services at a garage or service station. The tag has embedded within it an identity code which can be interrogated from a fixed point. Tags for this use are made by Micron Communications, Inc. of Boise, Idaho, U.S.A. One implementation is to provide an interrogator in a petrol pump. The tag is presented to the pump and interrogated to provide identification information for billing purposes. Alternatively the tag may be mounted in the car, as on the rear window.

Communication between the tag and the fixed interrogator is by a wireless communication means, for example by a magnetic field, infra-red or radio link. The use of a wireless communication medium and the characterisation of the radiation pattern of the antenna system or other radiating means provides for greater flexibility in the location of the tag relative to that of

Specification WO98/05171 (Micron Communications, Inc.) describes an RFID device with adjustable receiver sensitivity. It discloses the implementation of this type of device in a compact form, such as in an identification card, using a thin profile button-type battery. U.S. patent 5 448 110 (Tuttle) assigned to Micron Communications, Inc.) also addresses the problems of fabricating a compact RFID transceiver assembly in a low profile, flat, form. It discloses the possibility of transferring into an internal memory data received from a remote external interrogator and transmitting data stored in the internal memory.

The present invention is concerned with apparatus in a vehicle which enables information/entertainment and messages in general to be provided to the driver or other occupants of the vehicle.

Summary of the Invention

The invention has been developed in connection with two particular circumstances in which communications with the interior of the vehicle is difficult. The first is in a car wash where the car radio aerial is retracted, the car is closed up. It is difficult to reliably supply information/

entertainment at this point. The other circumstance is where the ignition is switched off leaving the car radio etc. inoperative.

According to the present invention there is provided

kinds to the driver or other occupant of the vehicle. The wireless mode of communication assumed for purposes of illustration is a radio link which may be one using spread spectrum techniques to enhance security and the selective communication of the fixed or remote station with a desired vehicle unit. Wireless links include, in addition to radio, magnetic induction, sound waves, particularly ultrasonic, and optical, e.g. infra-red. The radio communication between the fixed station and the vehicle unit in the system to be described, uses very low power. In many countries frequency bands are assigned for low power, short range, communication without the necessity of licensing.

The circuit to be described is constructed as a self-contained unit 1. The unit is located within a housing or case adapted to be mounted or attached at a suitable location within the vehicle. The unit 1 can be broadly considered in two parts, a transponder section 10 for communicating with a remote station 2 and a signal processing section 30 for providing an audio output to the vehicle occupant. The remote station 2 radiates radio signals through antenna 3 and may be linked as at 4 to a central network. The unit is intended to provide audio and/or visual information/entertainment or messages in general to the driver or other vehicle occupants. The description that follows will initially concentrate on an audio output. The transponder section 10 communicates

intervals. The interrogation signal is recognized by the microprocessor 16 and it responds by causing the identification code in memory 19 to be sent to the remote station 2 where it is stored to enable subsequent selective addressing of the transponder section 10. The address code may be the identification code or a code derived from it, i.e. part of the ID code, or it may be a code established at the time by the remote station 2 and stored in memory 18 for enabling transactions to be selectively established with unit 1. By this means data signals can be specifically directed to a given vehicle, even if other vehicles are within range. The nature and purpose of the data is discussed further below. The data addressed to unit 1 is extracted and formatted into a data stream by the microprocessor 16 and sent to the processing section 30 through port 20.

The processing section 30 is designed to use the incoming data to provide an audio signal may be used to provide an eventual external aural or audible signal (Fig. 2A) or it may be used directly in the unit to provide a sound output within the vehicle for the driver or other occupants. In processing section 30 the processing is controlled and the data decoded by a microprocessor (microcontroller) 32. The microcontroller receives a stream of serial data through serial port 20. This data is to be decoded to an audio signal. e.g. an announcement or music, which is output to an audio output stage 34

available in small flat packages, such transponders are available from Micron Communications, Inc. that are small enough to be used as a tag on a key ring.

To exemplify one use of the unit described thus far, it can be used to provide information or music within a vehicle going through a car wash. A fixed interrogator unit can be mounted adjacent the entry to the car wash to activate and identify the unit 1, and to address a data stream to it. This data stream can be decoded immediately to play the message or music while the vehicle is going through the car wash. Another possibility is to load the data stream elsewhere in a service station so that it is available should the vehicle then enter the car wash facility. The data stream is stored in memory and a trigger signal is provided on entering the car wash to cause the message/music to be played. In this case a remote station may be located at the entry to the car wash to transmit an appropriate trigger signal recognised by the transponder section 10 to initiate playback of the stored message.

It will be realised that the above-described unit is capable of providing the aural output for the vehicle occupant even in circumstances where the ignition is turned off and the vehicle electrics are dead. Even if the electrical power is available within the vehicle, the self-contained nature of the unit means that it functions without reliance on other electrical equipment within the

microcontroller and by means of which a user-operable input device, for example a key pad 48, is linked to provide input signals to the microcontroller 32. If the input device is a key-pad, while it may be incorporated in the unit 1, for convenience of use, it may be preferable to have the keypad 48 external to the unit 1 as shown. The connection to the unit 1 at port 48 may be made by a link 50 such as a cable or by infra-red. However, the interactivity by the user could be provided by voice commands in which case it may be possible to mount a voice responsive component as a part of the unit 1.

In the illustrated case key actuation is recognized by the microcontroller 32 which generates a code corresponding to the actuated key. This code is returned to the transponder microprocessor 16 via the serial port 20. The microprocessor 16 will then initiate a digitally coded signal for return to the remote station 2. The external action taken thereafter need not be restricted to providing information directly for the occupant. Data may be provided to other means within the unit 1 with, if desired, an acknowledgement for the occupant of the action taken. For example, it may be concerned with up-dating the sum available in a credit card memory connected to the microprocessor 16.

Although the practice of the invention has been described in relation to a self-contained unit for use within a vehicle, a wider utility is envisaged. For

Mention has been made above of sending data by means of compressed files. Specification WO98/23039 (Innomedia Pte Ltd.) describes concatenation compression for real-time voice and data processing. Another example of a compression technique for audio and data signals sent from one site to another is described in U.S. patent 5,742,773 (Blomfield-Brown et al).

Claims TS 9183 EPC

1. A unit for providing messages to a user emanating from a remote station, comprising:

a transponder for communicating with the remote station by a wireless mode of communication,

said transponder storing an identification code and being responsive to an interrogation signal from the remote station to emit an identification signal bearing said identification code,

said transponder being responsive to incoming data signals including an address code, which may be the same as or derived from said identification code, to provide the data to data processing means, and

said data processing means including means for providing an audio and/or visual output for the user of the unit.

2. A unit as claimed in Claim 1 in which said means for providing an audio and/or visual output at least includes means for providing an aural output.

3. A unit as claimed in Claim 1 in which said means for providing an audio and/or visual output is operable to provide at least an audio output, and further comprising means responsive to the audio output to generate a modulated signal for emitting externally of the unit.

4. A unit as claimed in Claim 1, 2 or 3 including means for receiving an input from a user in response to the audio and/or visual output and to initiate a signal from

Title: Transponder Communications System TS 9183 EPC

ABSTRACT

A unit (1) for use in a vehicle is interrogated and identified by a fixed interrogator (2). A wireless form of communication is established between the unit (1) and interrogator (2) to permit transfer of data to the unit (1). As well as appropriate communication circuitry (12) and an identification store (19), the unit (1) includes processing of the incoming data by a microprocessor (32) to provide an audio signal for energising a loud speaker (36) in the unit (1) to provide a sound output for the vehicle occupants. The unit is powered by internal batteries (22, 38) to be usable even when the vehicle ignition is turned off. The unit (1) is made self-contained to be mounted wherever convenient. The principle can be extended to providing data to control a visual display (Fig. 2B) in the unit (1). The unit (1) may be provided with a user-interactive input such as a keypad (48). A radio link is described but other wireless means of communication are feasible.

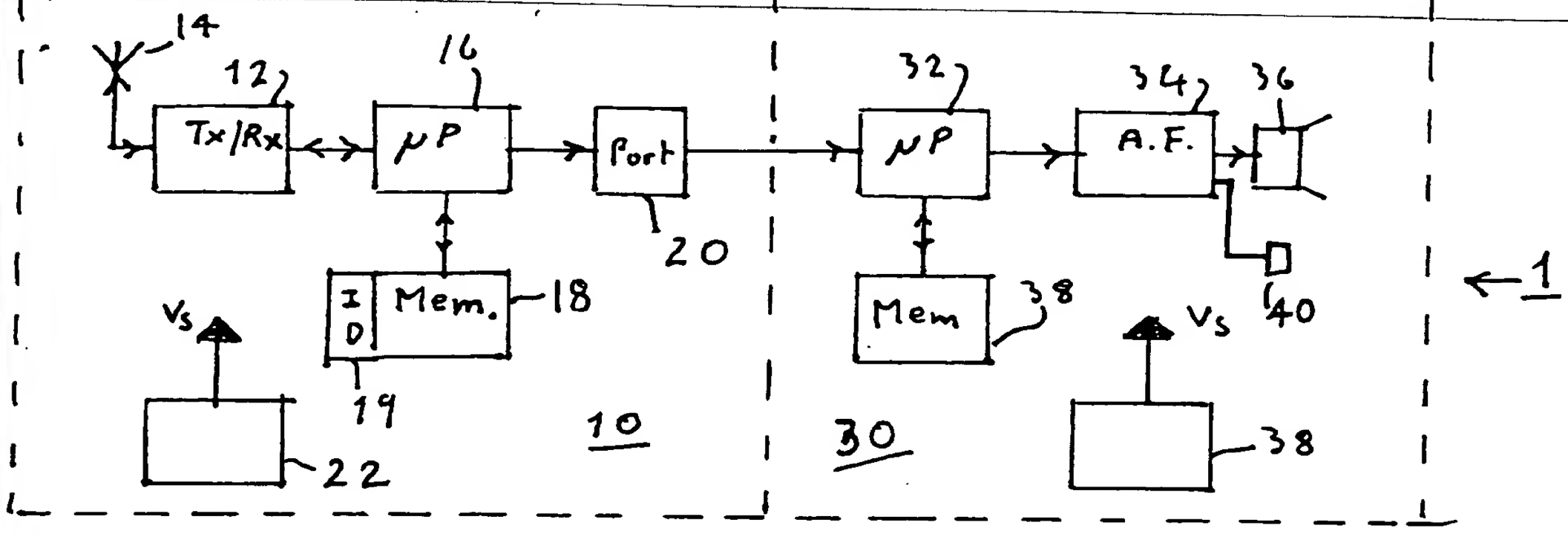


Fig. 1

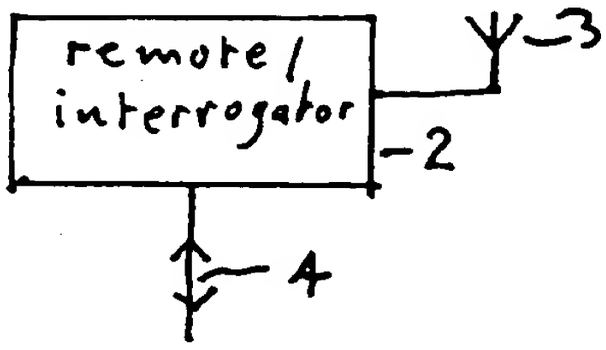


Fig. 2A

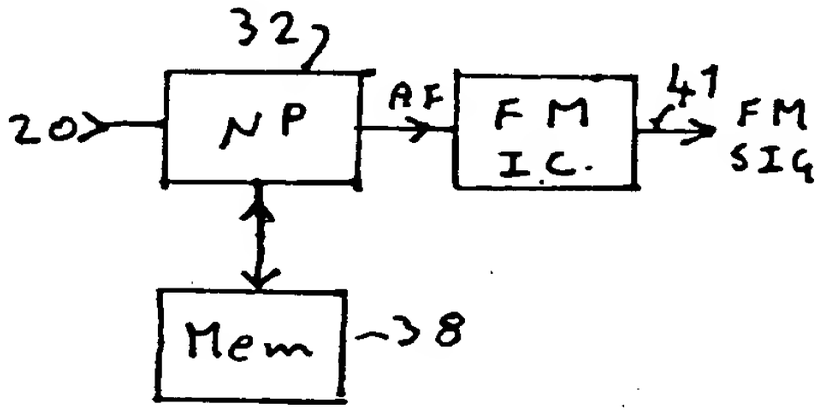
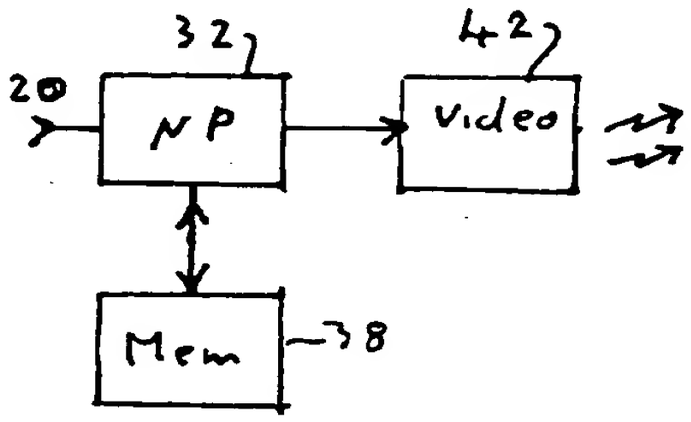


Fig. 2B



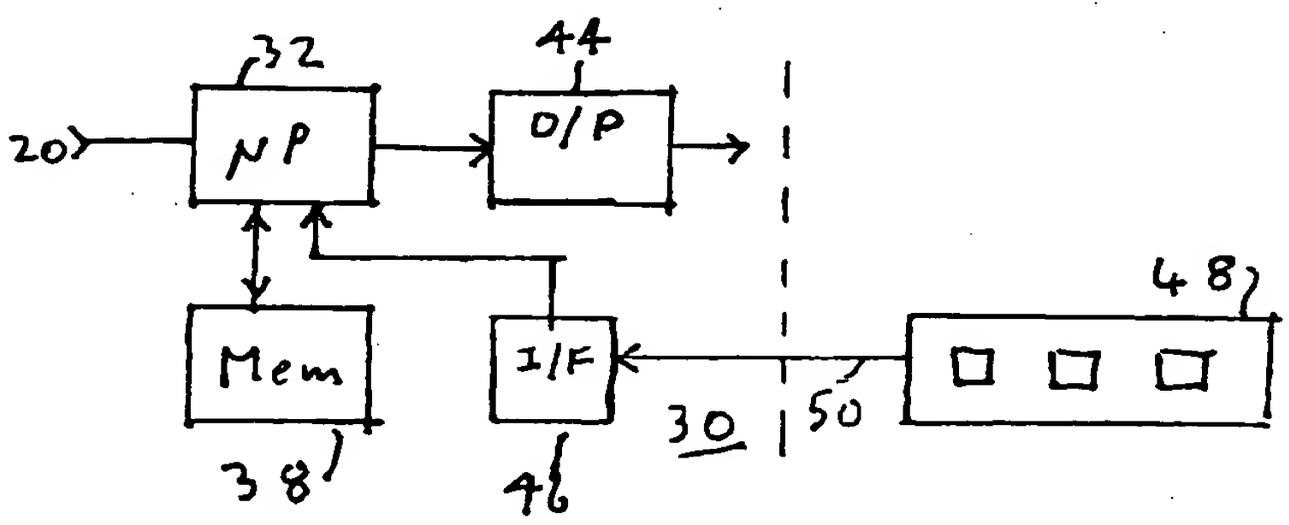


Fig. 2C

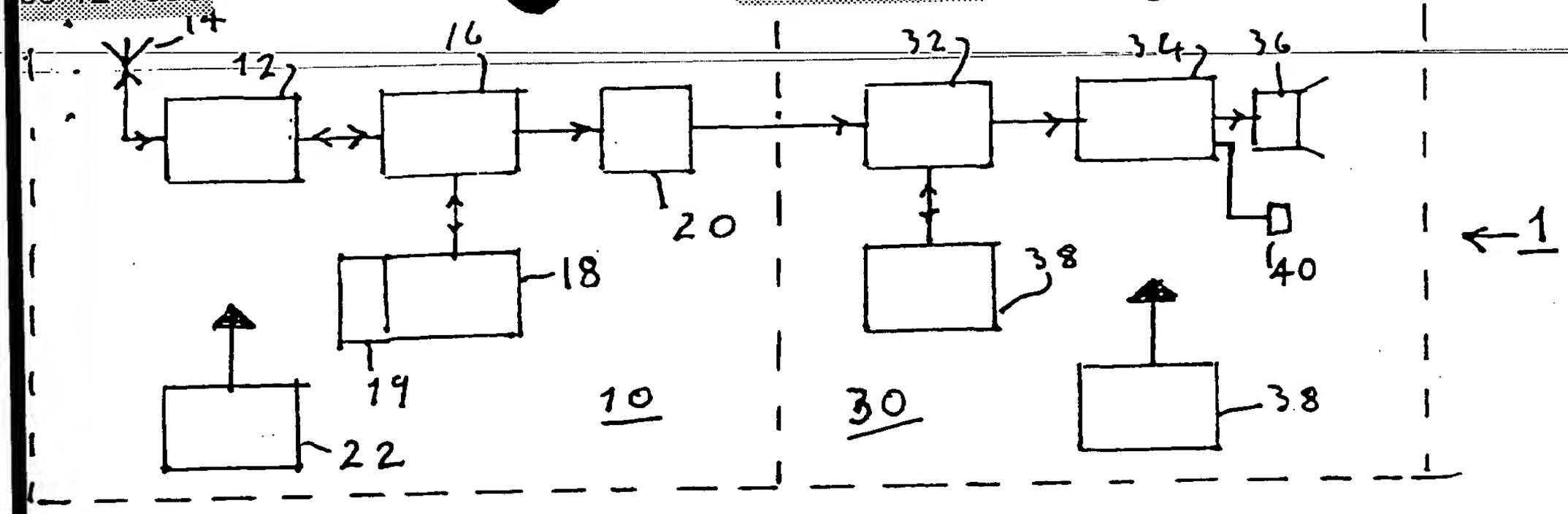


Fig. 1

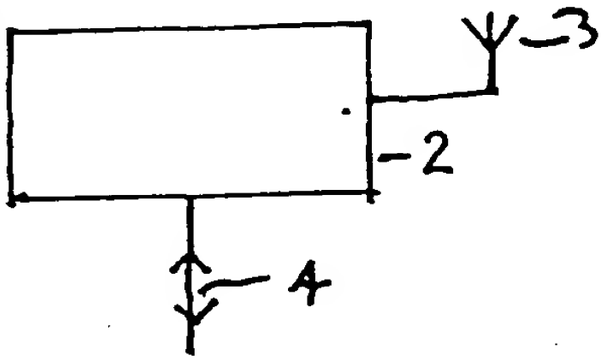


Fig. 2A

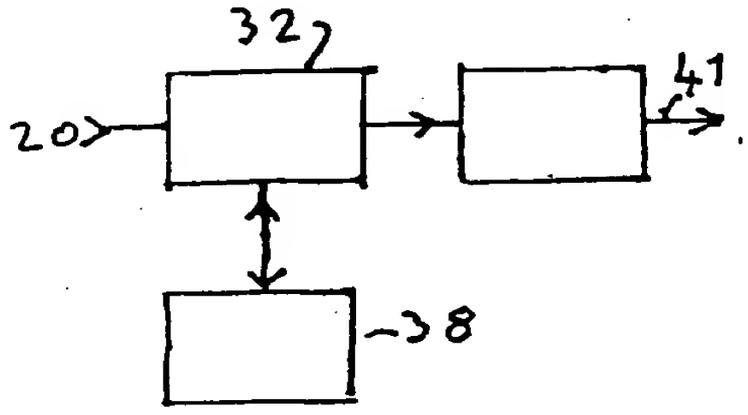
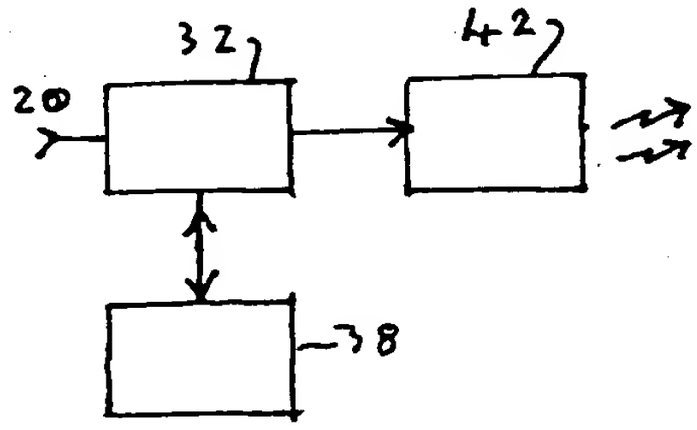


Fig. 2B



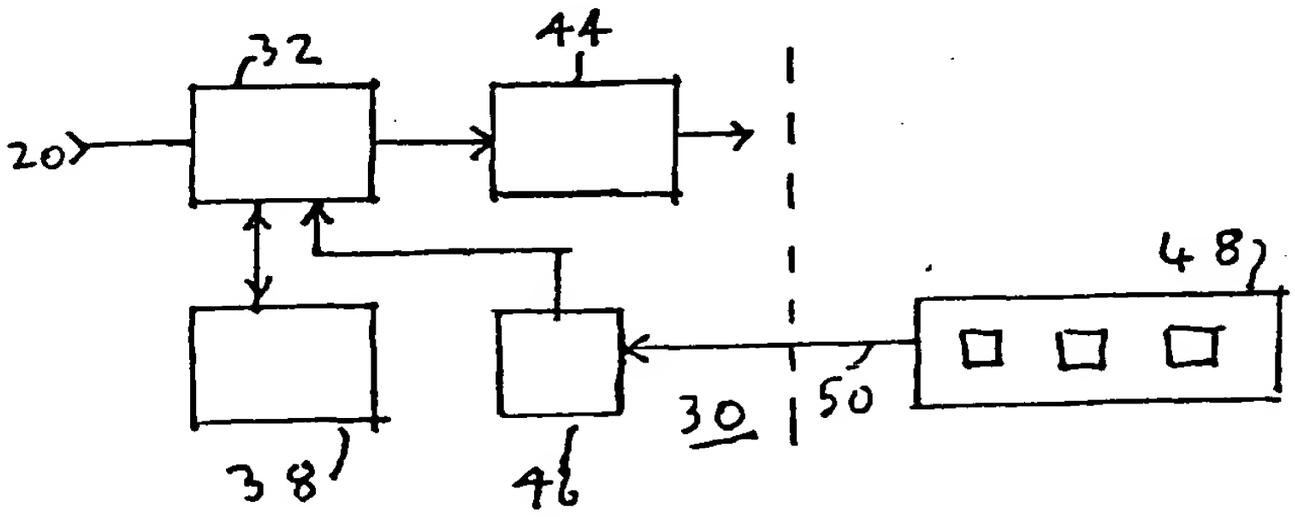


Fig. 2C

PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
TS 9183 PCT		
International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/EP 99/ 09794	08/12/1999	09/12/1998
International Patent Classification (IPC) or national classification and IPC		
G08G1/0967		
Applicant		
SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consists of a total of 12 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
30/06/2000	18. 12. 00
Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

I. Basis of the report

1. This report has been drawn up on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

[ ] the international application as originally filed.

[x] the description, pages 6, 9, 10, as originally filed,
pages _____, filed with the demand,
pages 1-5, 5a, 7, 8, 8a, filed with the letter of 30/10/00,
pages _____, filed with the letter of _____,

[x] the claims, Nos. _____, as originally filed,
Nos. _____, as amended under Article 19,
Nos. _____, filed with the demand,
Nos. 1-8, filed with the letter of 30/10/00,
Nos. _____, filed with the letter of _____,

[x] the drawings, sheets/fig _____, as originally filed,
sheets/fig _____, filed with the demand,
sheets/fig 1/1, filed with the letter of 22/11/00,
sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

[ ] the description, pages _____.
[ ] the claims, Nos. _____.
[ ] the drawings, sheets/fig _____.

3. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims 1-8	YES
	Claims	NO
Inventive Step (IS)	Claims 1-8	YES
	Claims	NO
Industrial Applicability (IA)	Claims 1-8	YES
	Claims	NO

2. CITATIONS AND EXPLANATIONS

From the explanations given by the Applicant in its reply about the closest prior art (WO 95/01607 acknowledged in the introductory portion of the description) with respect to the invention as claimed, it results that the subject-matter of new set of claims filed on 30/10/00 is considered to meet the requirements of articles 33 (2) and 33 (3) PCT.